

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/929,718	08/31/2001	Antoine J. Rouphael	2001P14759US

EXAMINER
Aghdam, Frashan N.

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ART UNIT	PAGE NUMBER
2611	5

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AMENDMENTS TO THE CLAIMS

In the Claims, please make the following amendments:

1. (Canceled) A method for reducing intersymbol interference in a telecommunications system, comprising:
 - specifying an initial shaping filter,
 - determining a level of intersymbol interference of a final shaping filter where said final shaping filter is obtained by processing signals associated with said initial shaping filter, said determining including generating a white noise data sequence and using said white noise data sequence in a model of channel noise and intersymbol interference;
 - updating final shaping filter coefficients at optimal sampling points other than every sample iteratively until the intersymbol interference is at or below a desired level; and
 - configuring a transmit filter of a radio frequency communications system with said final shaping filter coefficients.
2. (Canceled) A method in accordance with claim 1, wherein said optimal sampling points are at a sampling period.
3. (Currently Amended) A method for reducing intersymbol interference in a telecommunications system, comprising:
 - specifying an initial shaping filter, A method in accordance with claim 2,
wherein said initial shaping filter is being specified by performing a convolution
on a signal associated with a given filter, with having certain spectral and time
domain characteristics, with a signal associated with a matched complex
counterpart of said given filter,
 - determining a level of intersymbol interference of a final shaping filter
where said final shaping filter is obtained by processing signals associated with
said initial shaping filter, said determining including generating a white noise data

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REPLY TO OFFICE ACTION

ART UNIT	PAGE NUMBER
2611	6

sequence and using said white noise data sequence in a model of channel noise and intersymbol interference;

updating final shaping filter coefficients at optimal sampling points other than every sample iteratively until the intersymbol interference is at or below a desired level, said optimal sampling points being at a sampling period; and
configuring a transmit filter of a radio frequency communications system with
said final shaping filter coefficients

4. (Previously Presented) A method, comprising:

specifying a given filter with certain time domain and spectral characteristics,
obtaining a matched filter counterpart of said given filter;
performing a convolution between a signal associated with said given filter
and a signal associated with said matched filter to obtain an initial shaping filter;
generating a noise data sequence, said data sequence comprising a
channel noise and intersymbol interference model;
convolving said data sequence with said signal associated with said given
filter; and deriving a specification of an optimized shaping filter responsive to said
convolving by adaptively minimizing an error metric at points on said initial
shaping filter corresponding to optimal sampling points other than every sample
thus producing a signal with minimal ISI period; and
configuring a transmit filter of a radio frequency communications system
with coefficients associated with said optimized shaping filter.

5. (Original) A method in accordance with claim 4, said error metric
comprising a least mean squares error metric.

6. (Canceled) A telecommunications device, comprising:

a coder adapted to encode data;
an RF modulator; and
a shaping filter adapted to shape said encoded data, the shaping filter
specified by constraining filter coefficients in their adaptation at optimal sampling
points and not constraining said filter coefficients at points other than optimal

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EXAMINER
Aghdam, Freshten N.

REPLY TO OFFICE ACTION

ART UNIT	PAGE NUMBER
2611	7

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SEP 18 2007

sampling points, an initial shaping filter comprising a channel noise filter and intersymbol interference shaping filter, said intersymbol interference shaping filter adapted to minimize intersymbol interference, coefficients for said initial shaping filter specified based upon a matched filter and data sequence.

7. (Currently Amended) A telecommunications device, comprising:
a coder adapted to encode data;

an RF modulator; and

a shaping filter adapted to shape said encoded data, the shaping filter specified by constraining filter coefficients in their adaptation at optimal sampling points and not constraining said filter coefficients at points other than optimal sampling points, an initial shaping filter comprising a channel noise filter and intersymbol interference shaping filter, said intersymbol interference shaping filter adapted to minimize intersymbol interference, coefficients for said initial shaping filter specified based upon a matched filter and data sequence.
~~A telecommunications device in accordance with claim 6,~~ said shaping filter specified based upon a convolution between a signal associated with said initial shaping filter and a corresponding signal associated with said matched filter.

7. (Original) A telecommunications device as recited in claim 7, wherein said constraining is iteratively performed until an error metric reaches a steady state minimum level.
8. (Original) A telecommunications device as recited in claim 8, wherein said constraining is iteratively performed until an error metric reaches a predetermined threshold level.
9. (Previously Presented) A method, comprising:
specifying an initial filter;

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EXAMINER
Aghdam, Freshten N.

REPLY TO OFFICE ACTION

ART UNIT	PAGE NUMBER
2811	8

first convolving a signal associated with said initial filter with a complex conjugate of said signal to obtain a specification of an initial shaping filter;

second convolving said signal associated with said initial filter with a noise data sequence, said noise data sequence comprising a channel noise and intersymbol interference model;

deriving, responsive to said first convolving and second convolving, a specification of a shaping filter by minimizing an error metric at points on said signal associated with said initial filter corresponding to an upsampling period, the upsampling period comprising optimal sampling points other than every sampling point; and

configuring a transmit filter of a radio frequency communications system with coefficients based upon said specification of said shaping filter.

10. (Previously Presented) A method as recited in claim 10, wherein said deriving comprises constraining filter coefficients in their adaptation at optimal sampling points and not constraining them at non-sampling points.